CEN 4010 Principles of Software Engineering

Milestone 1: Team Project Proposal and Description

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**Instruction**:

This is a team project. Each team submits one document to Canvas

This document is the first milestone in your term-long project. You will propose a term project that will be developed and deployed over the course. Your team decides on the specific theme and features of your project, or you can work on the project that I have proposed for you (see Project Description on Canvas). If you choose your own project, please have instructor’s approval before proceeding.

Your term project proposal and description should include at least the following sections, based on which you can add more sections when you see fit.

# Executive Summary

A short description of the final project and its key advantages, novelty, and values, up to 1 page. Make it an executive summary -- think of answering the question of why you develop this project and target at what market sectors. Assign a product name to your project. This executive summary should be readable to a general audience who is not a computer science specialist. The executive summary is also used to advertise and promote your project.

Access Control Device

* This project is designed simply to grant access, monitor and keep track of students that want to use a workstation or any lab equipment (devices) located in some of the lab rooms in the Engineering East and West buildings. This will be implemented through a friendly user mobile app, that will require the student Z-number as authentication to log into the site. The site will grant four level of access User, Ta, Admin and Super Admin. The site will be accessed via an internet browser on a mobile device (smartphones, tablets, etc.). This will keep track of all workstations and lab equipment that are being used or available, by having an identifiable number assigned to it. The app will randomly assign an available workstation to the student and will show a sample picture of an operable clean workstation. The site will provide the user a selection of two choices to choose from, one if the bench is clean and operable and the other if is not. If the bench is not in good shape the user will be asked to take a picture of the workstation which will then be send to EE management team, while the student will be assigned a new available workstation. Once the condition of the workstation is verified, the user will be allowed to use the workstation for the allotted time. Afterwards the user will be required to take a picture of the bench to verify the condition of it. The site will periodically remind the user of their remaining time and will be warned when the time is approaching 0 min. The site will also keep track of over 200 devices (tools, soldering workstations, etc.) that are located in the Engineering East and Engineering West buildings. The site will periodically ping these devices to keep status of their state so in case of an outage the service will remember the state of this devices before the outage. Only students that take a university course at FAU will be granted permanent access to this workstations and lab equipment.

# Competitive analysis

|  |  |
| --- | --- |
| Our Features | Competitors Features |
| Mobile Browser Support | Requires App Download |
| Photo Upload Support | Text-only responses |
| Admin and Student Accounts | Only admin accounts stored in database |
| Supports different types of station | Only support 1 or 2 types of stations |
| Authentication via Z-number | Authentication via Username/Password |

While there are several competitors already on the market, they are not specifically tailored for the education use of several different types of physical devices. Most competitor’s software focuses either factories, which consist of mostly one type of station (for example there could be a soldering factory, or a drill press factory), or they focus on education station reservation, which is usually specific to desktop computers.

# Data definition

Station – Synonymous with “Work Bench” - One setup of equipment designed for the use of one person. For example, a soldering station, drill press station, or microscope station.

Equipment – Any individual device, usually combined with other devices to make a station.

WiFi Module – A device that connects to a wifi network and accepts commands via an API to turn a 110V AC relay on or off.

Soldering Station – Consists of a soldering iron, roll of tin, bottle of flux, loop, and wire holder.

Z-Number – A unique numerical identifier for each student.

Smartphone – Cellular phone with the capabilities to display a web page.

Website – Publicly accessible HTML page.

Tablet – Handheld device capable of displaying a web page.

Engineering East/West – A building location on FAU campus.

Picture – A photograph taken by a camera or phone.

# Overview, scenarios and use cases

This section describes the project overview (in much more details) and likelihood usage scenarios of your product from end users’ perspectives. Focus only on main use cases. Simple text format is OK and preferable – tell us a story about who and how is the application used. Focus on WHAT users do, their skill level, not on HOW the system is implemented. You can expand use cases provided in high level document in future milestones.

Product overview and its usage:

* Each workbench is assigned a number and when a user needs a bench the app will automatically search for ones that is available and assign it. The user will be shown a picture of a clean bench and will require to select if the bench is clean or not. If the bench is not clean then the user will be asked to take a pic of it and would also have the option of being reassigned.
* The site should also be mobile friendly since users will be accessing the site via an internet browser on their mobile device (smartphones, tablet, etc.) The user will be granted access to the bench or lab equipment only if they are enrolled in a University course. Users will be using their student Z-number to log into the site. Users will also be allowed access for a period of time only for a course session scheduled.
* All devices will have to be updated every few minutes in case of a power failures or other issues, so the device will resume its last state.
* This site will keep track of 200+ devices in Eng. West and East.

# Initial list of high-level functional requirements

This refers to the high-level functionality that you plan to develop to the best of your knowledge at this point. Focus on WHAT and not HOW. Keep the users in mind. Develop these functions to be consistent with use cases and requirements above. Number each requirement and use these numbers consistently from now on. For each functionality use 1-5 line description.

1. Users should be able to login to system with their FAU credentials.
   1. Users will enter in Z-number and password into the site
2. The system will validate their credentials.
   1. The system will check the users FAU credentials to make sure they are an active student.
   2. This process will also pull any additional information on the user such as the courses they are taking and the equipment that they can use.
3. Users will then be assigned a work bench to use.
   1. The user will be asked if the workbench they have been assigned is clean. If it is, then they will be assigned that workbench. If not, then they will be asked to take a picture and be assigned a new workbench.
4. Once a valid work bench is assigned, users will have a set time limit for how long they can work for and limited access to the tools that they can use.
   1. A timer will start once the user is assigned a valid workbench.
   2. They will only have access to equipment that they are qualified to use.
5. Once user is done with the bench, they are expected to clean up.
   1. Users are expected to clean the work area when they are done. This will be validated later when another user uses the same work area.
6. The system will then turn off any lights or devices after a certain amount of inactivity.
   1. After the inactivity period, the system will turn of any active devices or equipment.

# List of non-functional requirements

For example, performance, usability, accessibility, expected load, security requirements, storage, availability, fault tolerance etc. Number each. When possible, try to quantify these quality attributes.

Product requirements:

1.) The access control device needs to be simple to use and most users should be able to intuitively figure out how to operate it.

2.) The access control device should activate and deactivate the assigned equipment within 15 seconds of being requested.

3.) The access control device should resume its previous state when recovering from a power failure.

Organizational requirements:

4.) Users will be required to use their z number to access the system.

External requirements:

5.) The access control device should be able to operate across multiple browsers.

6.) Users should not have access to other users information except for staff for privacy concerns.

# High-level system architecture

Lists of main software products, tools, languages and systems to be used, list of core APIs available at this point, supported browsers etc.

You also have to decide on which frameworks you will use if any. These provide both user interface, as well as cross-platform and cross browser layout/css. All external code you plan to use must be listed along with their license.

For this project we will be using HTML5 and JavaScript for the front end of the website. The backend will be a web socket server and a SQL database for the users who are allowed access to the system. The tools we will be using are node.js which has a MIT license and uWebsockets which has a zlib license. The sonoff switches that will be used in the labs have an API to control them which is given in the following link: <https://blog.ipsumdomus.com/sonoff-switch-complete-hack-without-firmware-upgrade-1b2d6632c01>

# Team

List student group names, name of Scrum master, product owner and initial roles for each member

|  |  |
| --- | --- |
| Members | Roles |
| Bentialy Saint Julien | Front-end Developer |
| Jonathan Giger | Project Owner |
| Jonathan Parreira | Back-end Developer |
| Mihail Sandor | Scrum Master |
| Timothy Duncan | Front/Back-end Developer |

# Checklist

For each item below you must answer with only one of the following: DONE, ON TRACK (meaning it will be done on time, and no issues perceived) or ISSUE (you have some problems, and then define what is the problem with 1-3 lines)

1. Team decided on basic means of communications - Done
2. Team found a time slot to meet outside of the class - Done
3. Front and back end team leads chosen – On track
4. Github master chosen – On track
5. Team ready and able to use the chosen back and front-end frameworks – On track
6. Skills of each team member defined and known to all – Done
7. Team lead ensured that all team members read the final M1 and agree/understand it before submission – On track

# Tasks before submission

Teams must collaborate in creating M1 document by having working M1 document on their team GitHub private repository (similar to managing code) so all team members can access it. Added advantage of doing it this way is that it builds teamwork and communication. We recommend having a folder for project documentation on team’s GitHub where milestones and other similar files can be kept.

# Submission

Each team submits one single word document with all the above required sections to Canvas by the due date. Must have a title page to your document, including:

1. Course Title and term: CEN 4010 Principles of Software Engineering, Spring 2018,
2. Document name: Milestone 1 Project Proposal and High-level description
3. Your team name, and project name (you can use the name you chose for your team)
4. Team number (I will assign you one)
5. Names of students (team lead first) with e-mail of team lead
6. Date
7. History table (revisions) (Note: you will update this document based on instructors’ feedback so this is important)

# Grading criteria

Your document needs to be well-written, well-organized (formatted) and reads well. Grading is based on cohesiveness and completeness.

1. Executive Summary 10 points
2. Competitive analysis 10 points
3. Data definition 10 points
4. Overview, scenarios and use cases 10 points
5. Initial list of high-level functional requirements 10 points
6. List of non-functional requirements 10 points
7. High-level system architecture 10 points
8. Team and check list 10 points
9. Working with GitHub 10 points
10. Deliverable 10 points